12.0 GLOSSARY

A

Absorption – The incorporation of a substance in one physical state into another in a different physical state (absorption); e.g., the uptake of water, other fluids, or dissolved chemicals by a cell or an organism.

Adsorption – The process in which a substance adheres to the surface of a solid material.

Advection – The process of transport of matter by a mass of flowing fluid (e.g., a river).

Alluvial – Relating to the process of deposition of particles by flowing water.

Ammocoetes – Lamprey larvae (i.e., worm-shaped early juvenile stage), typically 1 to 4 inches long. They are transparent, eyeless filter-feeders and live in muddy river bottoms.

Anthropogenic – An effect or object resulting from human activity; e.g., natural and human-made substances may be present in the environment as a result of human activities.

Aqueous – Something made from, with, or by water.

Aquifer – An underground geologic formation, or group of formations, containing water that can be readily transmitted and that is a source of groundwater for wells and springs.

Aquitard – Geologic formation that may contain groundwater but is not capable of transmitting significant quantities of water to wells or springs. They may function as a confining bed.

Aroclor – Tradename of mixtures of PCBs. With the exception of Aroclor 1016, the last two numbers in the tradename designation correspond to the percentage of chlorine by weight.

Assessment Endpoint – In an ecological risk assessment, this is an expression of the environmental value to be protected; it includes both an ecological entity and specific attributes thereof. For example, salmon (i.e., the valued ecological entity) reproduction and population maintenance (i.e., attributes) is an assessment endpoint.

Attenuation – The process by which a chemical is reduced in concentration over time, through absorption, adsorption, degradation, dilution, and/or transformation. It can also be the decrease with distance of sight caused by attenuation of light by particulates.

B

Background (Background Level) – 1) As defined in USEPA (2002), substances present in the environment that are not influenced by releases from a site and are usually described as naturally occurring or anthropogenic, where *naturally occurring* is defined as substances present in the environment in forms that have not been influenced by human activity, and *anthropogenic* is defined as natural and human-made substances present in the environment as

a result of human activities but not specifically related to the CERCLA site in question. 2) In an exposure assessment, the concentration of a substance in a defined reference area, during a fixed period of time before, during, or after a data-gathering operation.

Bathymetry – The measurement of depths of water in rivers, lakes, oceans, and other water bodies. Also the information derived from such measurements. Bathymetry is expressed relative to a reference elevation or datum. The reference datum may differ for coasts and inland waterways such as the Columbia River and the Willamette River.

Bedload – Sediment particles resting on or near the channel bottom that are pushed or rolled along by the flow of water.

Benthic/Benthos – Relating to or characteristic of the bottom of an aquatic body or the organisms and plants that live there.

Bioaccumulation – The process by which an organism retains environmental chemicals in its body (possibly in a specific organ or tissue).

Bioavailability – The degree of the tendency of a chemical to be absorbed by an organism into its bloodstream.

Biomagnification – Refers to the process whereby the concentrations of certain chemicals such as PCBs or dioxins increase in organism tissue with increase in trophic level (i.e., moving up the food chain). The substances become increasingly concentrated in tissues or internal organs as they move up the food chain.

Biota-Sediment Accumulation Factor (BSAF) – The concentration of a chemical in tissue divided by a concentration in sediment. In the Portland Harbor Superfund Project, BSAFs were calculated from paired sets of chemical concentrations in sediment and tissue in two ways: 1) from the slope of the line that results from plotting paired sediment and tissue concentrations, or 2) as the average of BSAF values calculated for each set of paired observations of tissue and sediment concentrations. The BSAF is used to predict potential bioaccumulation of sediment-associated chemicals in tissues of ecological receptors.

C

Carcinogen – Any substance that can cause or aggravate cancer.

Central Tendency – When referring to the exposure of organisms to a chemical, an estimate of the average exposure that may potentially be experienced by the population.

Cleanup – Actions taken to deal with a release or threat of release of a hazardous substance that could affect humans and/or the environment. The term “cleanup” is sometimes used interchangeably with the terms remedial action, removal action, response action, or corrective action.

Colloid(s) – Very small solids (that do not dissolve) that remain dispersed in a liquid for a long time due to their small size and electrical charge.

Columbia River Datum (CRD) – A vertical datum established for the Columbia River from the lower river to the Bonneville Dam and on the Willamette River from the Columbia up to Willamette Falls. At the Morrison Street Bridge gauge, the CRD is 1.85 feet above NVGD29/47.

Combined Sewer Overflow (CSO) – Discharge which occurs when system storage and conveyance capacity are exceeded during large wet-weather events and sanitary wastewater and stormwater overflow directly to the river.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) – A U.S. legislative act of 1980 authorizing USEPA to respond to releases or threatened releases of hazardous substances that may endanger public health or the environment (also see Superfund).

Conceptual Site Model (CSM) – A written and/or schematic representation of an environmental system and the physical, chemical, and biological processes that determine the transport of chemicals from sources through environmental media to humans and ecological receptors in the system. The CSM is often revised periodically as additional data become available at a site.

Confined Aquifer – An aquifer in which ground water is confined under a capping aquitard or confining bed and in which groundwater will rise above the level of the confining bed if intersected by an opening, such as a well.

Congener – One of many related individual chemicals having similar chemical structure but different precise composition (e.g., PCB congeners each have two phenyl rings, but may differ in the number of chlorine atoms they contain).

Contaminant(s) of Concern (COC)[1] – Contaminants identified through the baseline risk assessment that potentially cause unacceptable adverse effects to human health and/or ecological receptors.

Contaminant(s) of Interest (COI)[2] – Contaminants that are expected to be present at a site based on a review of site information.

Contaminant(s) of Potential Concern (COPC)[3] – Contaminants of interest that have been screened-in for evaluation in later analyses during the risk assessment process.

[1] Prior deliverables and some of the tables and figures attached to this document may use the term "chemical of concern," which has the same meaning as "contaminant of concern" and refers to "contaminants" as defined in 42 USC 9601(33).

[2] Prior deliverables and some of the tables and figures attached to this document may use the term "chemical of interest," which has the same meaning as "contaminant of interest" and refers to "contaminants" as defined in 42 USC 9601(33).

[3] Prior deliverables and some of the tables and figures attached to this document may use the term "chemical of potential concern," which has the same meaning as "contaminant of potential concern" and refers to "contaminants" as defined in 42 USC 9601(33).

D

Dense, Nonaqueous-Phase Liquid (DNAPL) – Dense, nonaqueous-phase liquids, such as chlorinated hydrocarbon solvents or petroleum fractions, with a specific gravity greater than 1.0 that sink through the water column until they reach a confining layer.

Dermal Absorption/Penetration – The process by which a chemical penetrates the skin and enters the body as an internal dose.

Dermal Exposure (Contact) – Contact between a chemical and the skin.

Desorption – The release of a chemical from the surface of a solid material (e.g., a sediment particle) to water (e.g., water in or overlying the sediment).

Detection Limit – The lowest concentration of a chemical that can reliably be distinguished from a zero concentration.

Dredging – The removal of sediment from the bottom of water bodies. Dredging activities may be subject to regulation under Section 404 of the Clean Water Act.

Dry Deposition – The falling of small particles and gases to the Earth without rain or snow. Dry deposition is a component of acid deposition, more commonly referred to as acid rain.

E

Early Action – A non-time-critical removal action pursuant to 40 CFR 300.415(b) (4).

Ecological Risk Assessment (ERA) – The process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors, including chemicals.

Ecosystem – The interacting system of interdependent biological organisms and their nonliving environmental surroundings.

Effluent – Liquid waste—treated or untreated—that flows out of a treatment plant, sewer, or industrial outfall.

Epibenthic – The term referring to organisms that live on the bottom of riverbeds and/or lake and ocean floors.

Erosion – The wearing away of land surface by wind or water, intensified by land-clearing practices related to farming, residential or industrial development, road building, or logging.

Exposure – Contact between an organism or biological system and a chemical, physical, or biological agent. Exposure may be expressed as the amount in a given environmental medium (i.e., air, water, soil, sediment, or tissue) at the point of contact (see Exposure Point Concentration) or as the amount that is taken up by an organism (i.e., a dose).

Exposure Assessment – The measurement or estimation of the magnitude, frequency, duration, and route of exposure to stressors.

Exposure Pathway – The path from sources of chemicals to man and other species via soil, sediment, water, or food.

Exposure Point Concentration (EPC) – The concentration of a chemical or microbial contaminant at the location where exposure occurs.

Exposure Route – The way a chemical or microbial contaminant enters an organism after contact; i.e., by ingestion, inhalation, or dermal absorption.

Exposure Scenario – A tool used to develop estimates of potential exposure, dose, and risk. An exposure scenario generally includes facts, data, assumptions, inferences, and sometimes professional judgment about how the exposure takes place.

F

Flood Stage – A river stage established by the National Weather Service (NWS) above which flood damage may occur. The NWS defines flood stage for the Willamette River at Portland as 18.0 feet CRD.

Flux – The transfer of water equivalant to water flow or discharge, or the transfer of a chemical substance that is the product of the water flow and substance concentraition.

Food Web Model – A graphical or mathematical model that describes interconnecting feeding relationships. Some food web models may be used to simulate bioaccumulation of chemicals from environmental media and transfer through food chains.

G

Groundwater – The supply of water found beneath the Earth's surface, usually in aquifers, which supply wells and springs.

Groundwater Discharge – Groundwater entering a water body (e.g., lake, river, or coastal marine waters).

Groundwater Plume – Contaminated groundwater that is moving through the subsurface by advection and dispersion.

Groundwater Seep – Groundwater discharge that is visble as it enters a water body either above or below the water line.

H

Habitat – The place where a population (e.g. human, animal, plant, microorganism) lives and its surroundings, both living and non-living.

Hazard Index (HI) – An indication of the potential for cumulative noncancer effects that is derived by summing the individual chemical hazard quotients.

Hazard Quotient (HQ) – The ratio of estimated site-specific exposure to a single chemical to a selected toxicity threshold, which is either the level at which no adverse health effects are likely to occur (i.e., the no-observed-adverse-effect level) or at which effects are likely to occur (i.e., the lowest-observed-adverse-effect level).

Hazardous Substance – From CERCLA, a hazardous substance is: "(A) any substance designated pursuant to section 311(b)(2)(A) of the Federal Water Pollution Control Act [33 U.S.C. 1321(b)(2)(A)], (B) any element, compound, mixture, solution, or substance designated pursuant to section 9602 of this title [i.e., CERCLA], (C) any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Solid Waste Disposal Act [42 U.S.C. 6921] (but not including any waste the regulation of which under the Solid Waste Disposal Act [42 U.S.C. 6901 et seq.] has been suspended by Act of Congress), (D) any toxic pollutant listed under section 307(a) of the Federal Water Pollution Control Act [33 U.S.C. 1317(a)], (E) any hazardous air pollutant listed under section 112 of the Clean Air Act [42 U.S.C. 7412], and (F) any imminently hazardous chemical substance or mixture with respect to which the Administrator has taken action pursuant to section 7 of the Toxic Substances Control Act [15 U.S.C. 2606]. The term does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under subparagraphs (A) through (F) of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas)."

Homolog – In chemistry, a homolog refers to a chemical compound from a series of compounds that differ only in the number of repeated structural units. For example, PCB compounds with different degrees of chorination are called homologs, whereas PCB compounds with the same degree of chlorination but at different locations on the molecule are called congeners.

Hydraulic Gradient – The slope of the groundwater potentiometric surface from which the direction of groundwater flow can be predicted.

Hydrodynamics – The study of liquids in motion.

Hydrogeology – The study of the occurrence and movement of water below the earth's surface.

Hydrograph – A record of the stage and/or discharge of a river as a function of time.

Hyetograph – A graphical representation of the distribution of rainfall over the total duration of a storm event.

I

Infiltration – The penetration of water through the ground surface into subsurface soil or the penetration of water from the soil into sewer or other pipes through defective joints, connections, or manhole walls.

Initial Study Area (ISA) – The stretch of the Willamette River extending from approximately river mile 3.5 to river mile 9.2 and adjacent areas logically associated with an evaluation of the in-water portion of this stretch of the river.

Interceptor (Sewers) System – Large sewer lines that, in a combined system, control the flow of sewage to the treatment plant. In an extreme storm, they allow some of the sewage to flow directly into a receiving stream, thus keeping it from overflowing onto the streets. Also used in separate systems to collect the flows from main and trunk sewers and carry them to treatment points.

Interim Remedial Action Measure – An action that remediates a site but may not constitute the final remedy.

L

Light, Nonaqueous-Phase Liquid (LNAPL) – A nonaqueous-phase liquid with a specific gravity less than 1.0. Because the specific gravity of water is 1.0, most LNAPLs float on top of the water table. Most common petroleum hydrocarbon fuels and lubricating oils are LNAPLs.

Line of Evidence (LOE) – A specific analysis approach, based on empirical data or a model prediction that is used to assess potential risks to humans or ecological receptors.

Lipid Solubility – The maximum concentration of a chemical that will dissolve in fatty substances. Lipid soluble substances are insoluble in water; they will selectively disperse through the environment via uptake in living tissue.

Lower Willamette River – The stretch of the Willamette River from the confluence with the Columbia River (river mile 0) to Willamette Falls (approximately river mile 26).

Lowest Observed Adverse Effect Level (LOAEL) – The lowest level of a stressor that causes statistically and biologically significant differences between a test sample and a control sample (i.e., sample not subjected to a stressor).

M

Macropthalmia – Juvenile phase of lamprey ammocoetes. Metamorphosis from ammocoetes to macropthalmia occurs gradually over several months as developmental changes occur, including the appearance of eyes and teeth, and they leave the substrate to enter the water column. Transformation from ammocoetes to macropthalmia typically begins in the summer and is complete by winter.

Matrix – The sample material in which the chemicals of interest are found (e.g., water, sediment, tissue).

Mean High River Stage – The arithmetic mean of the maximum (e.g., highest daily measurement) observed river stage data in a given period (e.g., monthly mean high river stage).

Media – Specific environmental materials—air, water, soil, and biological tissue.

Mean High Water Mark (MHWM) – A tidal datum. The average of all the high water heights observed over the National Tidal Datum Epoch (19-year period).

Mean Low Water Mark (MLWM) – A tidal datum. The average of all the low water heights observed over the National Tidal Datum Epoch (19-year period).

Method Detection Limit (MDL) – The minimum concentration of a substance being analyzed that has a 99 percent probability of being identified.

Municipal Discharge – Discharge of effluent from wastewater treatment plants which receive wastewater from households, commercial establishments, and industries in a municipality (e.g., city or town). Combined sewer/separate storm overflows are included in this category.

N

National Geodetic Vertical Datum of 1929 and Supplemental Adjustment of 1947 (NGVD29/47) – NGVD29/47 is a fixed datum adopted and adjusted in 1947 as a national standard geodetic reference for heights prior to June 24, 1993 and is now considered superseded by NAVD88. NGVD29 is sometimes referred to as Sea Level Datum of 1929 or as Mean Sea Level (MSL) on some early issues of U.S. Geological Survey topographic quads. NGVD29 was originally derived from a general adjustment of the first-order leveling networks of the U.S. and Canada after holding mean sea level observed at 26 long-term tide stations as fixed. Historical data referencing MSL as the vertical datum in Portland Harbor is technically on NGVD29/47.

National Pollutant Discharge Elimination System (NPDES) – A regulatory program enacted under the Clean Water Act, which prohibits discharge of pollutants into waters of the United States unless a special permit is issued by USEPA, a state, or, where delegated, a tribal government on an Indian reservation.

No Observed Adverse Effect Level (NOAEL) – The highest exposure level at which there are no statistically or biologically significant increases in the frequency or severity of adverse effects between the exposed population and its appropriate control; some effects may be produced at this level, but they are not considered as adverse, or as precursors to adverse effects. In an experiment with several NOAELs, the regulatory focus is primarily on the highest one, leading to the common usage of the term NOAEL as the highest exposure without adverse effects.

Nonaqueous-Phase Liquid (NAPL) – Nonaqueous-phase liquids are liquids that are sparingly soluble in water. Because they do not mix with water, they form a separate phase. For example, oil is an NAPL because it does not mix with water, and oil and water in a glass will separate into two separate phases. NAPLs can be lighter than water (LNAPL) or denser than water (DNAPL). Hydrocarbons, such as oil and gasoline, and chlorinated solvents, such as trichloroethylene, are examples of NAPLs.

Non-detect – Data point for which the chemical of interest was not detected in an environmental sample.

Non-Point Sources – Diffuse pollution sources (i.e. without a single point of origin or not introduced into a receiving stream from a specific outlet). The contaminants are generally carried off the land by storm water. Common non-point sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, and industry.

North American Vertical Datum of 1988 (NAVD88) – This vertical datum is the national standard geodetic reference for heights. NAVD88 is a fixed datum derived from local mean sea level observations at Father Point/Rimouski, Quebec, Canada. NAVD88 replaced NGVD29/47 as the national standard geodetic reference for heights.

O

Ordinary High Water or High Water – Defined as the vegetation line or the line the water impresses on the soil by covering it for sufficient periods to deprive it of vegetation. It is established by field observation of seasonally high river levels by the U.S. Army Corps of Engineers and designates the jurisdictional limits of the Corps regulatory program. From Willamette RM 0 to 16, the ordinary high-water level ranges from 14.7 to 15.2 feet CRD. The Oregon Division of State Lands defines the ordinary high water line (OHWL) as a line on the bank or shore to which high water ordinarily rises annually in season. The OHWL excludes exceptionally high-water levels caused by large floods (e.g., 100-year events).

Oregon Environmental Cleanup Site Information (ECSI) – An electronic database that is available to the public and has a wide range of information about sites in Oregon with suspected or known releases of hazardous substances, as well as sites that the Oregon Department of Environmental Quality has determined require no further action. ECSI generally excludes sites with petroleum releases from underground storage tanks.

Organic Carbon (OC) Normalized – A chemical concentration in sediment adjusted for organic carbon content. The chemical concentration is divided by the fraction of sediment that is organic carbon.

Oxidation-Reduction Potential (ORP) – The electric potential required to transfer electrons from one compound or element (the oxicant) to another compound (the reductant); used as a qualitative measure of the state of oxidation in water treatment systems.

P

Pathway – An exposure pathway is the physical course a chemical, particle, or microbe takes from its source to the exposed organism.

Peeper – An *in-situ* diffusion-based sampling device used for sampling pore waters. The peeper consists of a sample container covered with a ~5-µm porous membrane.

Percent Fines – The sum of all silt and clay fractions in sediment; sediment particles passing U.S. standard sieve #230 (0.0625-mm openings).

Perched Water – Groundwater that is located above a primary groundwater surface and is separated by unsaturated soil or rock.

Permeability – The rate at which a liquid or gas flows through soil or other materials.

Photolysis – Decomposition of a chemical induced by light or other radiant energy.

Plume – A contiguous visible or measurable discharge of a substance or contaminants emanating from a given point of origin. Can be visible as, for example, a plume of smoke, or simply measureable, as for example, elevated concentrations of contaminants in a discharge plume in a river.

Point Source – A stationary location or fixed facility from which contaminants are discharged; any single identifiable source of pollution; e.g. a pipe, ditch, ship, ore pit, factory smokestack.

Pore Water – Water existing in the interstices (i.e., small spaces) between sediment particles.

Portland River Datum (PRD) – Datum of reference plane from which river stage is measured on the Willamette River at Portland at the Morrison Bridge gauge. PRD equals 1.55 feet above NGVD29/47 or MSL, and the PRD gauge reports water levels 0.30 feet above CRD levels at this location.

Preliminary Background Concentrations – Early evaluation of concentrations of chemicals in bedded sediments from the upriver reach of the lower Willamette River (RM 15.3 to 26). The primary use of these preliminary background concentrations is to support early identification of areas of potential concern to facilitate initiation of the FS prior to completion of the RI and baseline risk assessments. Preliminary background concentrations are subject to change pending finalization of the RI and baseline risk assessments and refinement of how background values can be used to support the FS.

Preliminary Remediation Goal (PRG) – An acceptable contaminant level or range of levels for a given medium that can be used to support an evaluation of remedial alternatives. Although the preliminary remediation goals are established based on readily available information, the final acceptable exposure levels should be determined on the basis of the results of the baseline risk assessment and the evaluation of the expected exposures and associated risks for each alternative. For Portland Harbor, PRGs are based on the highest, numeric matrix-specific (e.g., sediments, water, air) chemical value that should achieve target risk levels, and that can be used to identify areas of potential concern for a remedial investigation.

Q

Quality Assurance/Quality Control (QA/QC) – A system of procedures, checks, audits, and corrective actions to ensure that all USEPA research design and performance, environmental monitoring and sampling, and other technical and reporting activities are of the highest achievable quality.

R

Reasonable Maximum Exposure – The maximum exposure reasonably expected to occur in a population.

Receptor – A human demographic group (e.g., people who fish in a river) or ecological entity (e.g., species or group of species) that is potentially exposed to a stressor.

Recharge – The process by which water is added to a zone of saturation, as in the case of an aquifer. Infiltrating precipitation is one example of recharge to an aquifer.

Recharge Area – A land area in which water reaches the zone of saturation, usually by percolation from the soil surface infiltration, e.g., where rainwater soaks through the earth to reach an aquifer.

Remedial Action – The actual construction or implementation phase of a Superfund site cleanup that follows a remedial design.

Riparian Zone – A transition habitat between the upland (terrestrial) zone and a water body resulting from frequent but not constant inundation of water. For the Study Area, the riparian zone was defined as the portion of riverbank between approximately +13 feet to +22 feet NAVD88 vertical elevation.

Risk – An estimate of the likelihood of adverse effects on human health or ecological receptors associated with exposure to given stressors.

Risk Assessment – Qualitative and quantitative evaluation of the risk posed to human health and/or the ecosystem by the actual or potential presence of a stressor (e.g., a toxic chemical).

Risk Characterization – The last phase of the risk assessment process that estimates the potential for adverse human health or ecological effects to occur from exposure to a stressor and evaluates the uncertainty involved.

Risk Management – The process of evaluating and selecting alternative regulatory and non-regulatory responses to risk.

Risk Reduction – Lessening the risks, for example, from chemicals by lowering their concentrations, mobility, bioavailability, or toxicity, or reducing exposure of receptors-.

River Stage – Height of a river measured relative to a datum or specific elevation.

Round 1 – RI/FS field work performed at the Site during 2002. Initially termed Round 1A and Round 1 to denote separation of several months between sampling events.

Round 2 – RI/FS field work conducted at the Site from July 2003 through December 2005, following USEPA approval of the Programmatic Work Plan.

Round 3A – RI/FS field work conducted at the Site in 2006 and 2007 that was scoped before completion of the Comprehensive Round 2 Report.

Round 3B – RI/FS field work conducted at the Site in 2007 that was scoped and completed following completion of the Comprehensive Round 2 Report.

S

Saturated Zone – The area below the water table where all open spaces are filled with water.

Saturation Index (SI) – An indication of whether a particular mineral will dissolve or precipitate under specific conditions. Positive SI values indicate a tendency for the mineral to precipitate; negative values indicate a tendency for the mineral to dissolve.

Sediment Management Area (SMA) – Areas and volumes of sediments contributing to unacceptable risks segregated into discrete units for the purposes of the identification and evaluation of remedial technologies in the feasibility study.

Sediment Quality Guideline (SQG) – A sediment chemical concentration threshold that represents some documented association with no effects or a specified level of effect on benthic invertebrates. SQGs may be presented as a pair, with the lower concentration indicating a threshold below which adverse biological effects rarely occurred and the upper concentration indicating a threshold above which adverse biological effects frequently occurred in the data set used to derive the SQGs.

Seepage Meter – An *in-situ* device for measuring groundwater discharge flux-rates.

Silt – Sediment composed of fine mineral particles that pass a 200 sieve.

Site Characterization and Risk Assessment Database (SCRA) – A database containing environmental data from both LWG and non-LWG studies of the Portland Harbor Study Area.

Site Summary – A description of an upland site (e.g. current and historical uses, nature and extent of chemicals in soil and groundwater).

Slurry Wall – An underground barrier that serves as a low-flow boundary that restricts the movement of groundwater**.**

Solubility – A measure of how much a substance will dissolve in a liquid. Aqueous solubility is the maximum concentration of a chemical that will dissolve in pure water at a reference temperature.

Sorption – Refers to the incorporation of a substance in one physical state into another in a different physical state (absorption) or the physical adherence of molecules of one substance onto those of another (adsorption).

Stormwater Conveyance System – A system for the collection and transfer of stormwater to a discharge point.

Stressors – Physical, chemical, or biological entities that can induce adverse effects on ecosystems or human health.

Study Area – The stretch of the Willamette River extending from river mile 1.9 to river mile 11.8.

Superfund – The program operated under the legislative authority of CERCLA and the Superfund Amendments and Reauthorization Act that addresses both emergency removal and long-term remedial activities. The Superfund program includes establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising cleanup and other remedial actions.

Surface Runoff – Precipitation, snow melt, or irrigation water in excess of what can infiltrate the soil surface and be stored in small surface depressions; it is a major mechanism for transport of non-point source contaminants to water bodies.

Surface Water – All water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.).

Suspended Loads (Sediment) – Specific sediment particles maintained in the water column by turbulence and carried with the flow of water.

T

Thiessen Polygon – An area of a surface (e.g., river bottom) usually defined around a specific data point. Thiessen polygon edges are constructed by the equidistant perpendicular bisectors of a triangular irregular network line between neighboring sample points. Thiessen polygons contain only one input point, and any location within a polygon is closer to the associated input point than to the point of any other polygon.

Threshold – The exposure level (concentration or dose) below which a significant adverse effect is not expected or above which a significant adverse effect is expected.

Toxic Equivalent (TEQ) – The sum of a series of multiplicative products, each consisting of the concentration of an individual PCB or dioxin/furan congener multiplied by its TEF.

Toxicity – The degree to which a chemical or mixture of chemicals can cause adverse effects to living organsisms. *Acute toxicity* involves harmful effects in an organism through a single or short-term exposure. *Chronic toxicity* is the ability of a chemical or mixture of chemicals to cause adverse effects, usually upon repeated or continuous exposure over an extended period, sometimes the entire life of the exposed organism. *Subchronic toxicity* is the ability of the chemical or mixture to cause effects after exposure that is intermediate between acute and chronic.

Toxicity Equivalency Factor (TEF) – This factor denotes a given compound's relative toxicity compared to 2,3,7,8-TCDD, which is assigned the maximum toxicity designation of one.

Toxicity Reference Value (TRV) – A chemical concentration (or dose) threshold that represents some level of documented effect on a particular organism from exposure to the chemical (i.e., the minimum concentration at which adverse effects have been observed, or the maximum concentration at which no adverse effects have been observed).

Toxicity Testing – Biological testing (usually with an invertebrate, fish, or small mammal) to measure the adverse effects of a chemical, effluent, or environmental sample.

Transition Zone – The interval where both groundwater and surface water comprise some percentage of the water occupying pore space in sediments (also known as the hyporheic zone).

Transition Zone Water (TZW) – A mixture of groundwater and surface water occupying interstitial space in the sediments.

Trident Probe – A flexible, multi-sensor, water-sampling probe for screening and mapping groundwater plumes at the interface between groundwater and surface water.

Trophic Level – A functional classification of species that is based on feeding relationships and indicates how high on the food chain a species eats (i.e., how many potential energy transfer steps from the ultimate food source).

U

Unconfined Aquifer – An aquifer that is not confined by an overlying aquitard.

Unsaturated Zone – The area above the water table where soil pores are not fully saturated, although some water may be present. Also referred to as the vadose zone.

Urban Runoff – Stormwater from city streets and adjacent domestic or commercial properties that carries contaminants of various kinds into the sewer systems and receiving waters.

V

Vadose Zone – The zone between land surface and the water table within which the soil pores contain water that is less than saturation (except in the capillary fringe). The capillary fringe is the subsurface layer in which groundwater seeps up (by surface tension) from a water table to fill soil pores and is included in the vadose zone.

Volatile – any substance that evaporates readily.

W

Water Quality Criteria – Chemical concentrations in surface water specified by environmental regulation and expected to render a body of water suitable for its designated use. Criteria are based on specific levels of chemicals that would make the water safe for aquatic life or safe for human use for drinking, swimming, farming, fish production, or industrial processes.

Water Year – The 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 2009, is called the "2009 water year."

Weight of Scientific Evidence – The degree to which a body of scientific information supports a finding or conclusion. Considerations in assessing the weight of evidence in a risk assessment may include quality of testing methods, size and power of study design, consistency of results across studies, and biological plausibility of exposure-response relationships and statistical associations between stressors and effects.

Wet Deposition – The process by which chemicals are removed from the atmosphere and deposited on the Earth's surface via rain, sleet, snow, cloudwater, and fog.

Willamette River Flood Stage – Defined as +18 feet CRD on the lower Willamette River.

X

XAD Column – A stainless-steel column containing XAD-2 resin that is used in sampling to sorb hydrophobic organic compounds from the water column.